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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/553,788	10/20/2005	William J. Michie JR.	63138A	3958
109 7590 08/27/2009 The Dow Chemical Company Intellectual Property Section P.O. Box 1967 Midland, MI 48641-1967				
EXAMINER				
TESKIN, FRED M				
ART UNIT		PAPER NUMBER		
1796				
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08/27/2009		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/553,788

**Applicant(s)**

MICHIE ET AL.

**Examiner**

Fred M. Teskin

**Art Unit**

1796

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 04 May 2009.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 5-13, 20 and 21 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 5-13, 20 and 21 is/are rejected.  
7) ☒ Claim(s) 21 is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO/SI-108)  
Paper No(s)/Mail Date \_\_\_\_\_  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_

**Detailed Action**

This Office action is responsive to the reply filed on 04 May 2009. Claims 5, 10, 20 and 21 have been amended so as to obviate the informalities noted in the previous Office action. Claim 19 has been cancelled, thereby mooting the rejection under 35 U.S.C. 112. Claims 5-13, 20 and 21 remain pending and under examination.

Claim 21 is objected to because of the following informalities: in subparagraph 2) ii), "ration" should be changed to --ratio--. Appropriate correction is required.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 5-9 and 20 stand rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over US 6248831 ("Maheshwari").

Regarding claims 5-9 and 20, Maheshwari has disclosed a bimodal polyethylene resin blend suitable for extrusion into a film at high line speeds, the film having bubble strength and stability, particularly in terms of dart drop (col. 2, line 65 to col. 3, line 1 and col. 4, lines 22-23). The polyethylene blend comprises a high molecular weight (HMW) copolymer and a low molecular weight (LMW) copolymer, produced respectively in first and second fluidized bed, gas phase reactors using a titanium/magnesium catalyst. Specific disclosure is provided to blends wherein the LMW copolymer was produced using a molar ratio of  $\alpha$ -olefin to ethylene lower than that used to produce the HMW

copolymer; e.g., 0.027 and 0.0075 (C6/C2) in first (HMW) and second (LMW) reactors, respectively, which correspond to molar ratios used to prepare the high and low molecular weight fractions of the instantly claimed composition (see Examples 1-2 in cols. 11-13 and *cf.*, claim 7, subsections A) c) and B) c)). The product from the first reactor has a high load melt index (I 21.6) in the range of about 0.20 to about 5.0 g/10 min., a density in the range of 0.890 to 0.940 g/cc and a molecular weight of about 250,000 to about 600,000. The product from the second reactor has a melt index of 80 to 1000 g/10 min., a density of about 0.925 to 0.970 g/cc, and a molecular weight of about 15,000 to about 35,000; and the final blend is characterized by values of density, melt index (I 5), melt flow ratio (I 21.6/I 5) and molecular weight distribution (Mw/Mn) which fall fully within, or embrace, the corresponding property ranges defining applicants' claimed composition (see Maheshwari at col. 7, lines 40+ and *cf.*, parameters 1) - 4) of claims 5-6). Further as to dart impact, note that values of 305 grams and 470 grams are reported in Examples 4 and 5, for 0.5 mil (or 12.5 micron) and 0.8 mil film samples, respectively. As such, Maheshwari appears to teach all the compositional and property limitations of the present invention but for a bubble stability as measured according to claims 5 and 9, and a NLCS and a ratio of flexural modulus to density as per claim 20, as to which Maheshwari is silent. Nevertheless, the undisclosed properties would reasonably be expected to inhere to the blend or final product disclosed by Maheshwari, based on the identity of the common properties and polymer composition and the similarity in preparation. In regard to the latter, note that Maheshwari teaches extruding the blend under controlled oxygen level at feed and vent

ports, using a film extruder equipped with a screen pack at the downstream end (see col. 9, lines 60-65 and col. 15, lines 10-11), and as discussed above, demonstrates use of a lower molar ratio of  $\alpha$ -olefin to ethylene to produce the LMW copolymer of the bimodal blend than the HMW copolymer. Similar conditions are used in preparation of the applicants' claimed composition (*cf.* Specification at page 5, lines 5-10). Where claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes, a *prima facie* case of either anticipation or obviousness is established. *In re Best*, 195 USPQ 430, 433 (CCPA 1977).

Claims 10-13 and 21 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Maheshwari in view of US 6147167 ("Mack"), EP '769 ("Paina") and US 6485662 ("Neubauer").

Regarding product-by-process claims 10-13 and 21, Maheshwari lacks a disclosure of the claim limitations specifying use of an oxygen concentration of from about 0.05 to about 6 volume percent oxygen in nitrogen and of one or more active screens having a micron retention size of from about 2 to about 70, at a mass flux of about 5 to about 100 lb/hr/in<sup>2</sup>. It is, however, conventional in the art to treat a polyethylene with oxygen at the claimed concentration level in order to obtain improvements in bubble stability upon conversion of the polymer into film by blown extrusion, as taught by Mack and Paina. Regarding improvements in bubble stability and oxygen concentration, see paragraphs [0007] and [0015] of Paina and Mack at column 2, lines 20-32; column 3, lines 56-62; column 5, lines 25-30 and column 7, lines

58+. According to Paina, paragraph [0016], the gas mixture containing oxygen may be brought into contact with the polyethylene in any part of the extruder, including the plasticization or melting zone. It is also conventional in the art to use active screens having a micron retention size of about 2 to about 70 to screen a molten polyethylene blend, as taught by Neubauer (see, e.g., col. 2, lines 35+). The blend is characterized as bimodal, with a broad molecular weight distribution, preferably about 20 to about 30, and the screening step is taught to improve film homogeneity, as reflected by FAR values of plus 20 or higher (see Neubauer at col. 7, lines 30-35 and col. 10, lines 43-46). Given that Maheshwari is similarly concerned with improving bubble stability and attainment of a film appearance rating ranging from plus 20 to plus 40 (see col. 15, lines 35-40), it would have been obvious to an ordinarily skilled practitioner at the time of the invention to utilize an oxygen concentration as per Paina or Mack and a screening procedure as per Neubauer when extruding the bimodal blend disclosed by Maheshwari.

Applicants' arguments filed 05/04/09 have been fully considered, but are not persuasive of error in the repeated rejections.

Applicants traverse the rejection, arguing that Ref. 1 (Maheshwari) expressly requires a high molecular weight (HMW) polymer fraction having a melt flow ratio ( $I_{21}/I_5$ ) in the range of 20 to 65 (column, lines 12-15); and a low molecular weight (LMW) fraction having a melt flow ratio ( $I_{21}/I_5$ ) in the range of 20 to 65 (column 7, lines 36-38); whereas the instant invention, as presented in claim 5, requires a HMW fraction having

a melt flow index ratio ( $I_{21}/I_5$ ) of from about 6 to about 12; and a LMW fraction having a melt flow index ratio ( $I_{21}/I_5$ ) of from about 5 to about 15.

This argument lacks persuasiveness because the portions of Maheshwari cited by applicants describe both the HMW and LMW reactor products in terms of a melt flow ratio expressed as  $I_{21}/I_{2.16}$ , not  $I_{21}/I_5$ , and by a range of *about* 20 to about 65 (preferably about 22 to about 50).  $I_{2.16}$  is a melt index measured at 190°C and 2.16 kilograms while  $I_5$  is a melt index measured at the same temperature and 5 kilograms, as detailed in Maheshwari at column 7, lines 16-25. As there stated, melt flow ratio is the ratio of flow index ( $I_{21.6}$ ) to melt index ( $I_{2.16}$  or  $I_5$ ). Maheshwari describes his blend or final product as having a melt flow ratio ( $I_{21}/I_5$ ) in the range of about 20 to about 45 [column 7, lines 39-44], which falls within the range recited for corresponding parameter 3) in present claim 5, but does not explicitly disclose an  $I_{21}/I_5$  ratio for the HMW and LMW fractions making up the blend. Nonetheless, because the melt index  $I_5$  is measured under a higher load (5 kg) than  $I_{2.16}$  (2.16 kg) but at the same temperature, one would reasonably expect the HMW and LMW fractions of Maheshwari to display a melt flow ratio ( $I_{21}/I_5$ ) lower than the corresponding  $I_{21}/I_{2.16}$  ratio disclosed; e.g., less than about 20. Further, as noted by applicants, present claim 5 recites [subparagraphs A)d) and B)d)] ranges for the melt flow ratio ( $I_{21}/I_5$ ) of the high and low molecular weight fractions inclusive of “about 12” and “about 15”, respectively. The word “about” does not have a universal meaning in patent claims and must be construed in light of the technological facts of each case. *Pall Corp. v. Micron Separations, Inc.*, 36 USPQ2d 1225, 1229 (Fed. Cir. 1995). In this case, there is no evidence that “about 12” and “about 15” would

not cover values that are at least somewhat higher than precisely 12 and 15, respectively, and within the scope of melt flow ratios for the corresponding fractions disclosed by Maheshwari when determined utilizing the *same* melt index parameter.

Accordingly, the continued rejection of claims 5-13, 20 and 21 is still deemed tenable and therefore must be maintained.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner F. M. Teskin whose telephone number is (571) 272-1116. The examiner can normally be reached on Monday through Thursday from 7:00 AM - 4:30 PM, and can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached on (571) 272-1114. The appropriate fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Fred M Teskin/  
Primary Examiner, Art Unit 1796

FMTeskin/08-25-09